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(19) (CA) **CANADIAN PATENT** (12)

(54) Hydraulic Pump Jack

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FIELD OF THE INVENTION

5 This invention relates to an improved hydraulic pump jack and also to a system of operating a pump in a well which is connected only by liquid lines to a pump jack at the head of the well.

THE PRIOR ART

10 It used to be customary to operate pumps at the bottom of a well from a windmill or other source by having a mechanical rod passing down the water delivery pipe to provide a mechanical connection between the power source and the pump.

15 This of course gave rise to many problems when servicing of a pump was required as it was necessary not only to withdraw the actuating line which passed down the water delivery pipe but also the water delivery pipe to which the pump was attached.

20 According to earlier inventions of mine a method and means was developed which required only pipe connections to the pump and no pump rod was involved, thus greatly facilitating servicing and withdrawal of the pump from a bore or well.

25 According to an earlier specification of mine, this improved system was used and that was based on a pump having a pair of cylinders arranged co-extensively and co-axially within which were a pair of pistons coupled by a hollow pump rod provided with the necessary valve means to cause



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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A hydraulic pump jack for hydraulically actuated well pumps of the general type having pistons driven in one direction to lift liquid up a delivery pipe and having the pistons returned by liquid in a control pipe to recharge the said pump, characterised by a double-acting pump having a first pump section arranged to be coupled to the said liquid delivery pipe extending up the well, and a second pump section arranged to be coupled to the said pump control pipe which also extends up the well, fluid actuated valve means in the said delivery pipe to normally stop outflow from the said delivery pipe and means coupling the said control pipe to the said valve means to actuate the said control valve to allow an outflow of liquid from the said delivery pipe when the said control pipe is pressurised during the pressure stroke of the said first pump section.

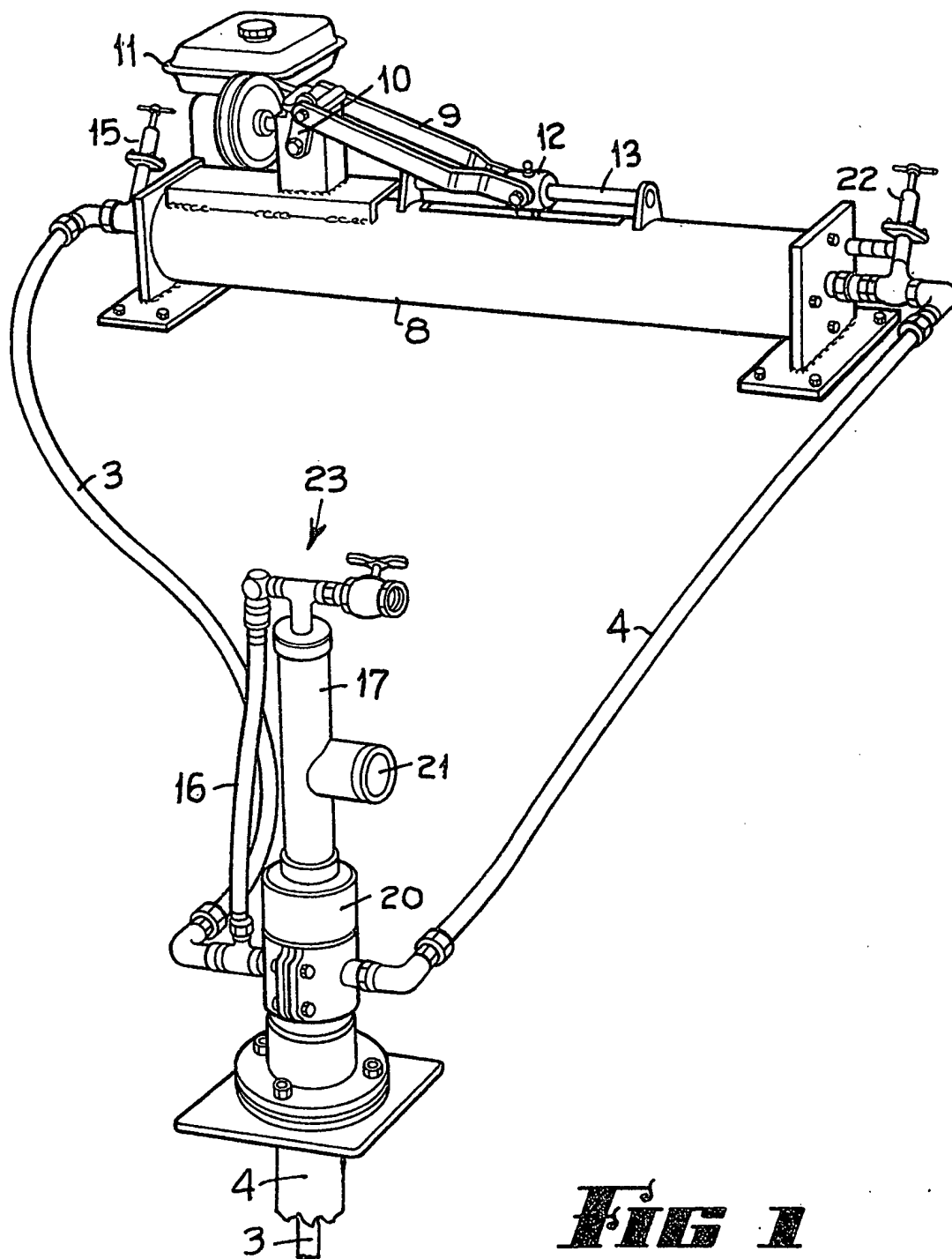
2. A hydraulic pump jack for hydraulically actuated well pumps of the general type having pistons driven in one direction to lift liquid up a delivery pipe and having the pistons returned by liquid in a control pipe to recharge the said pump, comprising first and second pump cylinders with pistons therein interconnected to be oppositely actuated, said first pump cylinder being adapted to be connected to communicate with the said control pipe of a remote liquid delivery pump, and second pump cylinder being adapted to be connected to the said liquid delivery pipe of the said remote liquid delivery pump, and normally closed valve means connected to receive liquid from the said first pump cylinder to open the said valve means by liquid pressure, said valve means being positioned in the said delivery pipe and arranged to be opened to allow flow from the said liquid delivery pipe when the said control pipe is pressurised during the delivery stroke of the said well pump.

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ABSTRACT

A hydraulic pump jack for hydraulically actuated well pumps of the general type having pistons driven in one direction to lift liquid up a delivery pipe and having the pistons returned to recharge the said pump, comprising a double-acting surface pump with one pump section arranged to communicate with a liquid delivery pipe extending up the well and the other section arranged to communicate with a pump control pipe which also extends up the well, and valve means connected to the said control pipe to open the delivery pipe to allow an outflow of liquid from the delivery pipe during the pressure stroke of the pump section connected to the said control pipe.

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**FIG 1**

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